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INFLUENZA—PREVALENCE IN THE UNITED STATES.

Influenza has been officially reported to the Public Health Service as more or less extensively prevalent in more than half of the States, representing all sections of the United States. It is evident, therefore, that the epidemic which, so far as this country is concerned, was first reported from Chicago during the week ended January 17, is now becoming general; and while there are still many localities from which no epidemic has yet been reported, it is to be expected that they will be attacked within the course of the next few weeks.

That the epidemic which first appeared in certain large cities and in several States would appear in other sections of the country was, from the first, considered possible, since the most constant characteristic of influenza, when it becomes epidemic, is its wide and rapid spread, surpassing that of any other known disease. What could not be foretold was the probable seriousness of the epidemic—that is, its effect upon the death rate—because, in respect to fatality, epidemics of influenza vary enormously, and past experience affords no certain basis for predictions. Even now it is impossible to make an accurate estimate of the seriousness of the situation, since the epidemic is still on the increase and statistics of deaths, during recent weeks are not available yet, except for large cities where deaths are reported promptly and where the records of past years afford a basis for comparison with the “normal” death rates from influenza and pneumonia.

The Public Health Service is now receiving, through the health departments of a number of States, daily telegraphic reports of the number of cases of influenza and of deaths from influenza and pneumonia (all forms). In addition to these reports the weekly summaries of deaths from all causes and from influenza and pneumonia, secured from over 40 large cities by the Bureau of the Census, are made immediately available.

Morbidity Reports.

The number of cases of influenza occurring in various States, as far as they have been reported by State health departments to the Public Health Service, are tabulated as they come in, and the weekly totals for January, 1920, including the week ended January 31, are presented in the following table:

TABLE I.—*Influenza case reports. Number of cases of influenza occurring in various States as reported to the Public Health Service by State health departments.*

[States omitted are those from which no reports have been received. Blank spaces indicate that no report was received for the week.]

State.	Average per week in De- cember, 1919.	Week ended January—				
		3	10	17	24	31.
Alabama.....	5				8	203
Arkansas.....	26	52	35	53	179	595
California.....	24		24	264	1,244	6,615
Connecticut.....	5	1	1	14	1,123	4,664
Delaware.....	3	1	1		5	21
District of Columbia.....				126	1,216	1,616
Florida.....	6	14	2	10	484	1,547
Georgia.....	25	10	27	27	95	617
Idaho.....			88	270		2,783
Illinois.....	55	60	73	3,251	14,805	29,156
Indiana.....	41	31	18	44	1,714	
Iowa.....	3	1	10	30	644	3,960
Kansas.....	11	22	17	45	1,130	8,582
Kentucky.....	44	41	45	75		178
Louisiana.....	13	32	52	27	123	763
Maine.....	2	7	1	4		387
Massachusetts.....	31	41	40	54		3,730
Minnesota.....						5,775
Missouri.....						4,043
Montana.....	3	2		1	45	1,159
Nebraska.....	1		2	1	154	1,815
New Jersey.....	28	22	23	98	753	7,365
New Mexico.....	3	2	8	4	61	260
New York (exclusive of New York City).....	36	52	31	61	555	4,755
North Carolina.....						3,356
South Carolina.....						1,661
South Dakota.....	1					
Vermont.....	1				25	89
Virginia.....						3,097
Washington.....	1				12	902
West Virginia.....						1,667
Wisconsin.....	3	6	3	67	1,944	6,739
Wyoming.....						1,372
Total.....	362	397	501	4,526	26,319	109,482
Number of States reporting.....	30	21	10	21	21	31

These case reports are, of course, extremely incomplete. Even for specific localities they can not be depended upon to do more than afford an indication (in advance of mortality reports) of possibly an epidemic condition. The mildness of the disease, which is rather generally commented upon, is probably causing physicians to hesitate to report cases as influenza until, in any given locality, the belief becomes somewhat common that the disease is influenza. Where such a belief has become general it is probable that the reports are much more complete than during the epidemic of 1918, for a number of reasons, among which may be mentioned the fact that the profession is not depleted as it was in 1918. Comparisons of the case fatality of influenza as indicated by ratios of deaths to reported cases at the present time with that indicated in 1918 are certain to be grossly misleading unless the fatality of a sufficiently large sample of specific cases in different ages is ascertained.

Mortality Reports.

The only dependable index of the course of the epidemic is afforded by mortality reports. The weekly summaries for over 40 cities for

December and January, furnished by the Bureau of the Census in its "Weekly Health Index," supplemented in certain instances by reports to the Public Health Service, are shown in Table II. In order to afford a better basis for comparing cities, annual death rates per 100,000 population from influenza and pneumonia (all forms) have been computed for each week and are shown in Table III. In the same table is shown the annual rate for the median year of the 7-year period, 1910-1916, for December and January, as well as for the week ended January 31, so that the rates for 1920 can be compared with what is a rough "normal" rate for the season. It is essential in arriving at any estimate of the influence of the epidemic that consideration should be given to the normal seasonal rate, especially since the death rate for influenza and pneumonia is ordinarily on the increase at this time of the year. The median year has been used instead of a mean, for the reason that the mean (i. e., arithmetic average) is affected by exceptionally high or low years. Any average, of course, whether it be a mean or a median, is, at best, a very crude indication of the normally expected rate, but it is sufficiently accurate for the purpose in hand.

TABLE II.—Deaths from influenza and pneumonia (all forms) in certain large cities, by weeks, in December, 1919, and January, 1920.

City.	December.				January.				
	1919: Week ended—				1920: Week ended—				
	6	13	20	27	3	10	17	24	31
Albany, N. Y.	4	5	5	6	6	3	2	3	14
Atlanta, Ga.	¹ 13	¹ 8	¹ 9	¹ 6	¹ 6	² 19	¹ 10	¹ 10	15
Baltimore, Md.	21	28	32	28	30	20	35	24	59
Birmingham, Ala.	18	8	11	9	11	² 13	18	16	14
Boston, Mass.	9	21	³ 0	23	24	28	28	45	85
Buffalo, N. Y.	15	9	8	15	13	10	7	19	17
Cambridge, Mass.	1	1	4	2	4	8	7	8	14
Chicago, Ill.	57	80	92	93	98	107	153	472	1,109
Cincinnati, Ohio.	7	11	15	17	18	14	12	17	25
Cleveland, Ohio.	21	17	23	¹ 14	28	21	25	26	41
Columbus, Ohio.	5	8	7	3	5	15	9	8	22
Dayton, Ohio.	1	6	5	1	7	4	7	13	46
Denver, Colo.	11	8	10	11	15	21	18	24	³ 19
Fall River, Mass.	2	3	5	3	3	7	10	5	3
Grand Rapids, Mich.	3	2	4	2	3	1	4	2	6
Indianapolis, Ind.	8	11	12	13	¹ 3	18	¹ 16	21	36
Jersey City, N. J.	5	18	¹ 3	19	12	14	14	24	64
Kansas City, Mo.	9	14	(⁴)	12	12	13	29	96	110
Los Angeles, Calif.	13	11	16	6	18	16	18	19	³ 8
Louisville, Ky.	11	7	4	10	9	10	10	9	18
Lowell, Mass.	4	4	2	5	3	5	4	2	7
Memphis, Tenn.	9	12	8	8	15	12	12	11	10
Milwaukee, Wis.	10	¹ 6	21	15	15	25	¹ 13	45	141
Minneapolis, Minn.	5	14	11	10	20	12	10	9	² 46
Nashville, Tenn.	9	10	7	4	4	6	11	6	12
Newark, N. J.	9	13	9	9	15	17	14	30	55
New Haven, Conn.	6	6	8	6	11	6	8	10	19
New Orleans, La.	11	16	11	20	18	27	27	27	32
New York, N. Y.	137	149	162	175	195	218	261	511	1,308
Oakland, Calif.	6	2	3	5	7	4	8	20	³ 12
Omaha, Nebr.	4	5	6	12	5	4	7	13	45
Philadelphia, Pa.	57	51	69	43	64	55	75	108	153
Pittsburgh, Pa.	38	30	31	36	55	47	53	55	76
Portland, Oreg.	¹ 3	¹ 5	¹ 9	¹ 5	¹ 4	¹ 13	¹ 8	¹ 9	(⁴)
Providence, R. I.	2	6	10	11	6	12	13	8	14
Richmond, Va.	3	5	1	2	6	2	9	6	21
Rochester, N. Y.	8	7	5	4	8	13	7	12	23

¹ Deaths from pneumonia (all forms) only.

² Figures from telegraphic reports to Public Health Service.

³ Deaths from influenza only; no report of deaths from pneumonia.

⁴ No report.

TABLE II.—Deaths from influenza and pneumonia (all forms) in certain large cities, by weeks, in December, 1919, and January, 1920—Continued.

City.	December.				January.				
	1919: Week ended—				1920: Week ended—				
	6	13	20	27	3	10	17	24	31
St. Louis, Mo.....	27	27	33	35	47	57	41	73	236
St. Paul, Minn.....	7	1	8	7	7	4	(1)	26	272
San Francisco, Calif.....	10	11	11	15	20	14	26	48	59
Seattle, Wash.....	5	9	7	7	9	2	4	7	12
Spokane, Wash.....	3	2	5	2	0	4	3	3	41
Syracuse, N. Y.....	4	4	2	6	6	9	8	10	31
Toledo, Ohio.....	3	7	8	3	8	9	8	9	18
Washington, D. C.....	13	19	23	14	32	22	27	81	181
Worcester, Mass.....	11	13	6	6	5	10	9	7	14

¹ No reports. — ² Figures from telegraphic reports to Public Health Service. — ³ Deaths from pneumonia (all forms) only. — ⁴ Deaths from influenza only; no report of deaths from pneumonia.

TABLE III.—Annual death rate per 100,000 from influenza and pneumonia (all forms) by weeks in December, 1919, and January, 1920, compared with that of the corresponding month for the median year (of 1910–1916).

City.	December.					January.					For week ended Jan. 31 in median year of period 1910-1916.	
	Average for median year of period 1910-1916.	1919: Week ended—				Average for median year of period 1910-1916.	1920: Week ended—					
		6	13	20	27		3	10	17	24		31
Albany, N. Y.	222	185	232	232	278	407	278	139	93	139	649	407
Atlanta, Ga.	269	1336	1207	1233	1155	223	1155	2491	1258	1258	388	238
Baltimore, Md.	281	163	218	249	218	370	233	156	272	187	459	358
Birmingham, Ala.	298	475	211	290	237	298	290	343	1211	422	369	325
Boston, Mass.	251	60	139	(*)	153	301	159	186	186	219	564	298
Buffalo, N. Y.	211	165	99	88	165	212	143	110	77	209	187	214
Cambridge, Mass.	229	47	47	187	94	267	187	374	328	374	655	264
Chicago, Ill.	251	114	161	185	187	344	197	215	307	948	2,227	342
Cincinnati, Ohio.	194	87	137	187	212	261	224	175	150	212	312	271
Cleveland, Ohio.	185	135	109	148	190	174	180	135	161	167	264	173
Columbus, Ohio.	219	116	185	162	69	213	116	347	208	185	509	210
Dayton, Ohio.	176	40	239	200	40	269	279	160	29	519	1,836	269
Fall River, Mass.	202	81	122	203	122	317	122	284	406	203	122	368
Grand Rapids, Mich.	90	115	77	154	77	153	115	39	154	77	231	154
Indianapolis, Ind.	167	144	198	215	233	278	154	323	1287	377	646	260
Jersey City, N. J.	261	82	294	149	311	295	196	229	229	393	1,047	292
Kansas City, Mo.	182	150	233	(*)	199	266	199	216	482	1,5	1,828	284
Los Angeles, Calif.	161	119	101	147	55	189	165	147	165	174	373	183
Louisville, Ky.	185	236	150	86	215	230	193	215	215	193	387	239
Lowell, Mass.	236	191	191	96	239	317	143	293	191	96	335	308
Memphis, Tenn.	271	303	404	270	270	330	505	404	404	371	337	327
Milwaukee, Wis.	151	115	69	241	172	182	172	287	1149	517	1,621	187
Minneapolis, Minn.	138	68	190	150	136	223	272	163	136	122	3625	228
Nashville, Tenn.	294	394	437	306	175	313	175	262	481	262	525	333
Newark, N. J.	227	109	158	109	109	277	182	207	170	365	669	261
New Haven, Conn.	266	202	202	269	202	440	370	202	269	337	640	432
New Orleans, La.	248	150	218	150	273	324	246	368	368	368	436	344
New York, N. Y.	242	137	149	162	175	266	195	218	261	511	1,308	277
Oakland, Calif.	185	146	49	73	122	170	170	97	195	487	292	157
Omaha, Nebr.	247	116	145	174	347	274	145	116	202	376	1,302	294
Philadelphia, Pa.	223	169	151	204	127	260	189	163	222	320	453	280
Pittsburgh, Pa.	330	334	264	272	316	393	483	413	466	483	668	388
Providence, R. I.	203	40	119	188	218	294	119	237	257	158	277	315
Richmond, Va.	271	97	162	32	65	365	195	65	292	195	681	373
Rochester, N. Y.	155	158	138	98	79	225	158	256	138	236	453	218
St. Louis, Mo.	242	180	180	221	234	314	314	381	274	488	1,578	300
St. Paul, Minn.	135	142	20	162	142	163	142	81	(5)	526	1,457	159
San Francisco, Calif.	212	109	120	120	163	215	218	153	283	523	643	181
Syracuse, N. Y.	167	129	129	65	194	200	194	291	258	323	1,001	217
Toledo, Ohio.	123	60	139	159	60	183	159	179	159	179	358	202
Washington, D. C.	213	169	247	299	182	264	415	286	351	1,052	2,350	278
Worcester, Mass.	202	330	390	180	180	325	150	300	270	210	420	341

¹ Deaths from pneumonia only. — ² Figures from telegraphic reports to Public Health Service. — ³ Death from influenza only. — ⁴ Unofficial figures. — ⁵ No reports received.

Figures as published in weekly Public Health Report of earlier dates relating to deaths in weeks prior to that ended Jan. 31 have been revised according to more recent reports.

According to information furnished in the Weekly Health Index the death rates from influenza and pneumonia, from May, 1919, to January 1, 1920, were quite generally below the usual average, and there was no significant increase in the death rate until the week ended January 17, when, with the beginning of the influenza epidemic in Chicago, the death rate from influenza and pneumonia in that city increased sharply, but still not in excess of the average for the season. Since then there has been a progressive increase each week in the influenza and pneumonia death rate in Chicago, and similar progressive increases, showing unmistakably the effect of the epidemic, or at least a significant increase in the week ended January 31, have taken place in New York City, Washington, Milwaukee, Kansas City, St. Louis, Cleveland, San Francisco, Albany, Atlanta, Baltimore, Cambridge, Columbus, Dayton, Indianapolis, Jersey City, Louisville, Minneapolis, Newark, New Haven, Philadelphia, Pittsburgh, Richmond, Rochester, St. Paul, Syracuse, and Toledo. Most of those cities showing progressive increases, it will be noted, are middle western cities. No significant increase in death rate has been reported from the rest of the 45 cities, although in some of them the death rate which, up to January 1, was below the seasonal average, has risen to at least the usual average.

The increase over the seasonal "normal" of the death rate from influenza and pneumonia (all forms) in certain cities which have shown the influence of the epidemic for two or three weeks is shown in Table IV. Since the increase is expressed in rates, comparisons are possible, not only of weeks but also of cities.

TABLE IV.—*Comparison of the annual death rate per 100,000 from influenza and pneumonia (all forms) for each week in January, 1920, with that for the corresponding week of the median year of the period 1910-1916,¹ and the excess for 1920, in certain large cities.*

City.	January, 1920, week ended—				
	3	10	17	24	31
Chicago:					
Rate in 1920.....	197	215	307	948	2,227
Rate for median year.....	303	333	344	344	341
Excess in 1920.....	-106	-118	-37	604	1,886
New York:					
Rate in 1920.....	195	218	261	476	1,308
Rate for median year.....	256	260	265	270	276
Excess in 1920.....	- 61	- 42	- 4	206	1,032
Milwaukee:					
Rate in 1920.....	172	287	149	517	1,621
Rate for median year.....	170	176	181	185	188
Excess in 1920.....	- 2	111	-32	332	1,433
Washington:					
Rate in 1920.....	415	286	351	1,052	2,350
Rate for median year.....	252	262	270	278	284
Excess in 1920.....	163	24	81	774	2,066
St. Louis:					
Rate in 1920.....	314	381	274	488	1,578
Rate for median year.....	298	309	312	310	300
Excess in 1920.....	16	72	-38	178	1,278
Kansas City:					
Rate in 1920.....	199	216	482	1,595	1,828
Rate for median year.....	232	250	263	274	284
Excess in 1920.....	- 33	- 34	219	1,321	1,544

¹ The weekly rates for the median year in the period 1910-1916 have been approximated by plotting the rate for the median year for each month (thus affording a rough "normal" seasonal curve) for each city and then by reading from the curve the indicated median rate at the mid-point for each week.

A matter of extreme interest at the present time, naturally, is the outlook for the immediate future. How long is the present epidemic in any locality going to last? What will be its toll in increased mortality? To what extent will it spread?

Obviously it is too early at this writing (Feb. 4) to answer any of these questions, even if there were a basis for prediction. The course of the epidemic in 1918 varied so widely in different localities that no common or constant curve of it has as yet been expressed in mathematical terms. Were such a formula empirically possible from the 1918 epidemic, there is no assurance that it would afford us any accurate foundation for estimating in advance the course and the effect of this one. The "laws" of epidemic influenza have not been discovered, although certain interesting and possibly important facts are being ascertained.

A comparison of the course of the present epidemic or epidemic wave with that in 1918 may, however, afford some idea of its probable course. In order to afford material for such a comparison, the weekly excess over the "normal" seasonal mortality rate from influenza and pneumonia (all forms) has been computed for the period September 8 to November 30, 1918, for four large cities and is given in Table V. These excess rates may be compared with those given in Table IV. Similar computations for certain other cities were not completed in time for publication but will be presented later.

TABLE V.—*Excess of death rate from influenza and pneumonia (all forms) by weeks, September 8 to November 30, 1918, over that in corresponding week of median year (1910-1916) in certain large cities.*¹

City.	Excess over corresponding week of median year.—Annual rate per 100,000.											
	September.			October.				November.				
	14	21	28	5	12	19	26	2	9	16	23	30
Chicago.....	- 53	- 50	- 78	728	1,988	4,098	4,627	2,801	1,311	599	304	223
New York.....	- 20	11	93	629	2,010	4,107	5,091	4,259	2,122	885	743	224
Milwaukee.....	- 4	- 4	91	108	711	1,215	1,915	1,328	971	675	427	873
Washington.....	68	52	373	2,175	6,240	7,989	4,957	2,240	584	395	313	365

¹ The weekly rates for the median year in the period 1910-1916 have been approximated by plotting the rate for the median year for each month (thus affording a rough "normal" seasonal curve) for each city, and then by reading from the curve the indicated median rate at the mid point for each week. The excess has been found by subtracting this median rate from the actual rate for each week in 1918. When the difference is "minus" it is so indicated.

Some difficulty will be found at this stage of the present epidemic in fitting the 1918 and 1920 curves, since in some of the cities the 1920 rates have been considerably below that of the "normal." It would appear that proper consideration should be given to the increase, not only above the "normal," as shown by the median year

of the period 1910-1916, but above the January, 1920, rate. Allowing for these conditions, and plotting the two sets of rates as well as the percentages of increase from week to week, the indications at this writing are that the 1920 epidemic in Chicago and Milwaukee, for example, is following the 1918 epidemic very closely, both in its course and in its severity; but that in New York and Washington, for example, the course of the two epidemics is fairly similar, although the 1920 epidemic is not nearly so severe.

With certain exceptions, the present epidemic so far has shown itself to be of decidedly less serious aspect than the one of 1918, using the excess mortality rate as the measure of severity. The highest death rates in the 1918 epidemic were reached in most cities in four weeks from the date on which the epidemic first manifested itself in the respective cities; so that, according to this experience and in view of the general similarity of the curves up to this time, a decline may be expected in Chicago, New York, and perhaps other cities, in the next week or two. It will then be possible to form a more accurate estimate of the course and of the severity of this epidemic in other cities where it is not yet at or near its maximum.

With respect to the spread of the present epidemic in the first three weeks, a comparison with the area of extension of the 1918 epidemic indicates that the two are very nearly on a parity.

OCCURRENCE OF MALARIA AND ANOPHELINE MOSQUITOES IN MIDDLE AND SOUTHERN CALIFORNIA.

By WILLIAM B. HERMS, Associate Professor of Parasitology, University of California, and Consulting Entomologist of the California State Board of Health.

A State-wide malaria-mosquito survey of California was begun in the spring of 1916¹ and carried on during the summer of that year and a portion of the following summer (1917) when the work was interrupted on account of the war. This survey was again taken up in 1919, and was completed during the summer of that year. A report of the work done during 1916 in the northern third of the State has already been published;² this report presents a summary of the work done in the middle and southern portions of the State.

The survey of the northern third of the State covered 31 counties, and resulted in a total of 289 mosquito collections, consisting of 2,769 specimens, of which 38 per cent were anopheline mosquitoes (62.8 per cent *A. quadrimaculatus*, 15.1 per cent *A. punctipennis*,

¹ Herms, William B., A State-wide Malaria-Mosquito Survey of California: Journ. Econ. Entomology, vol. 10, No. 3, pp. 359-370, 1917.

² Herms, William B., Occurrence of Malaria and Anopheline Mosquitoes in Northern California: U. S. Public Health Reports, vol. 34, No. 29, July 18, 1919, pp. 1579-1587.